

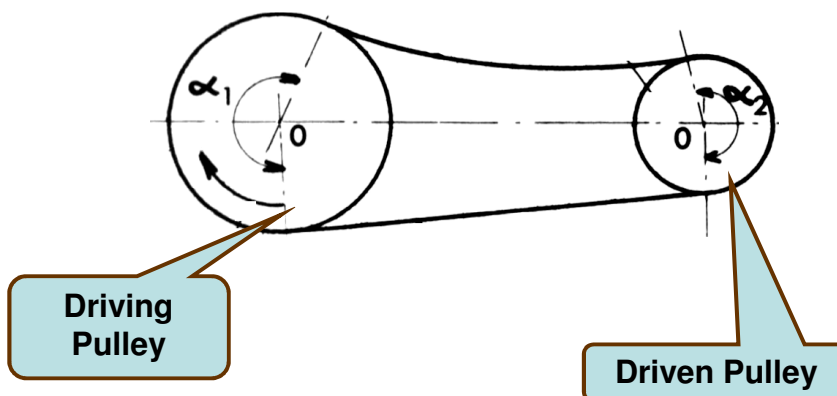
Belt Drives

Flat Belts

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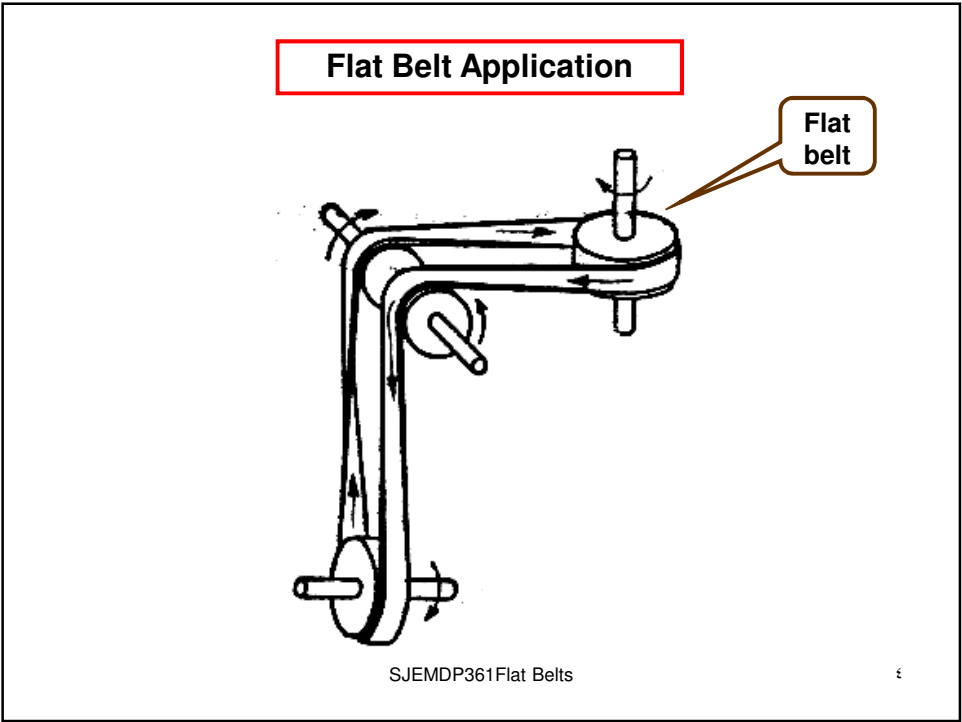
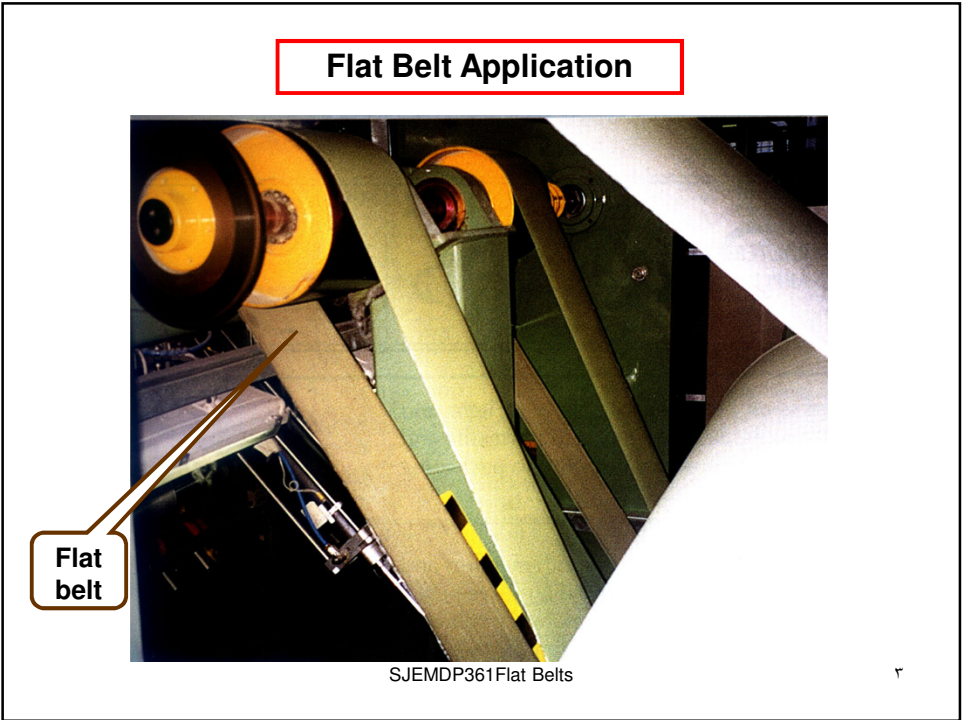
1

Open Belt Drive

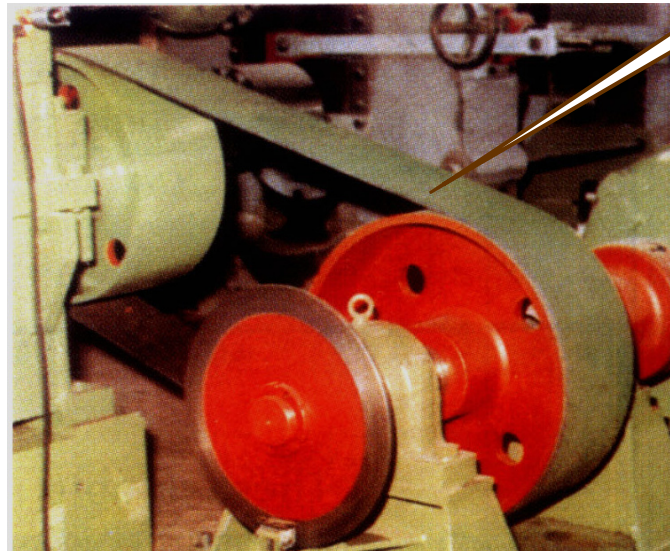


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2



Flat Belt Application

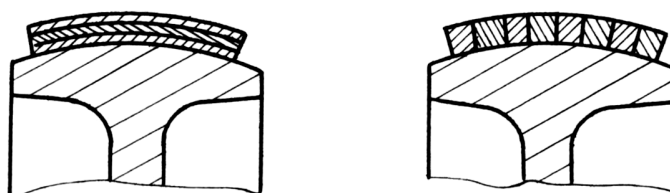


Flat
belt

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Flat Belts

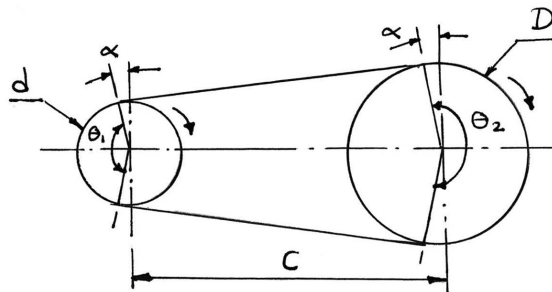


Belt materials:

*Cotton tissue, Rubber,
Leather, Nylon, ...*

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1

Belt Calculations**Open Belt Drive**

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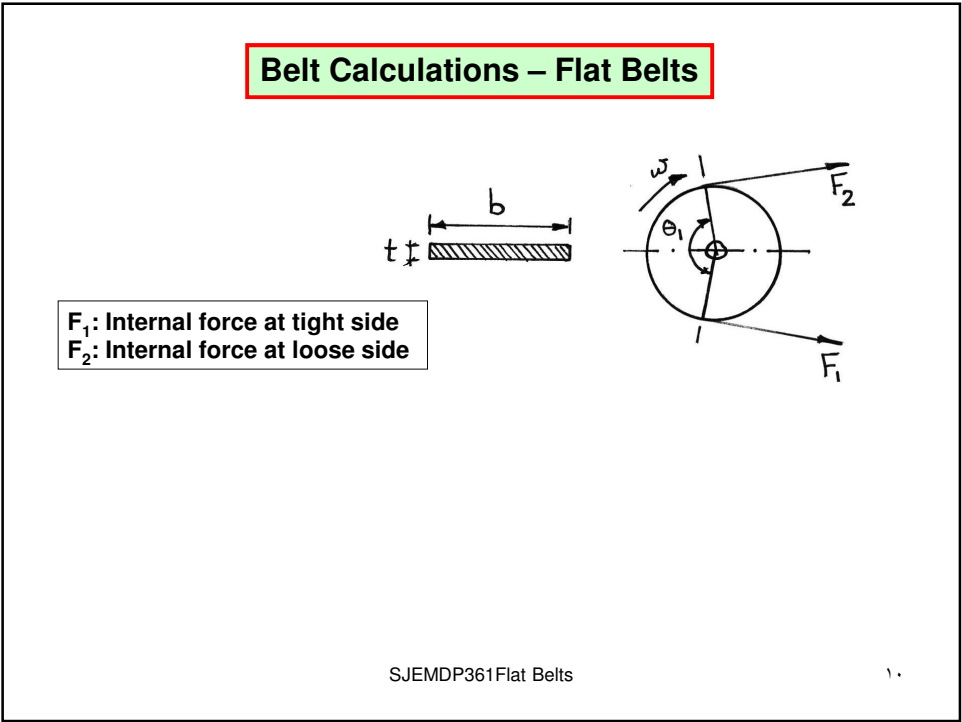
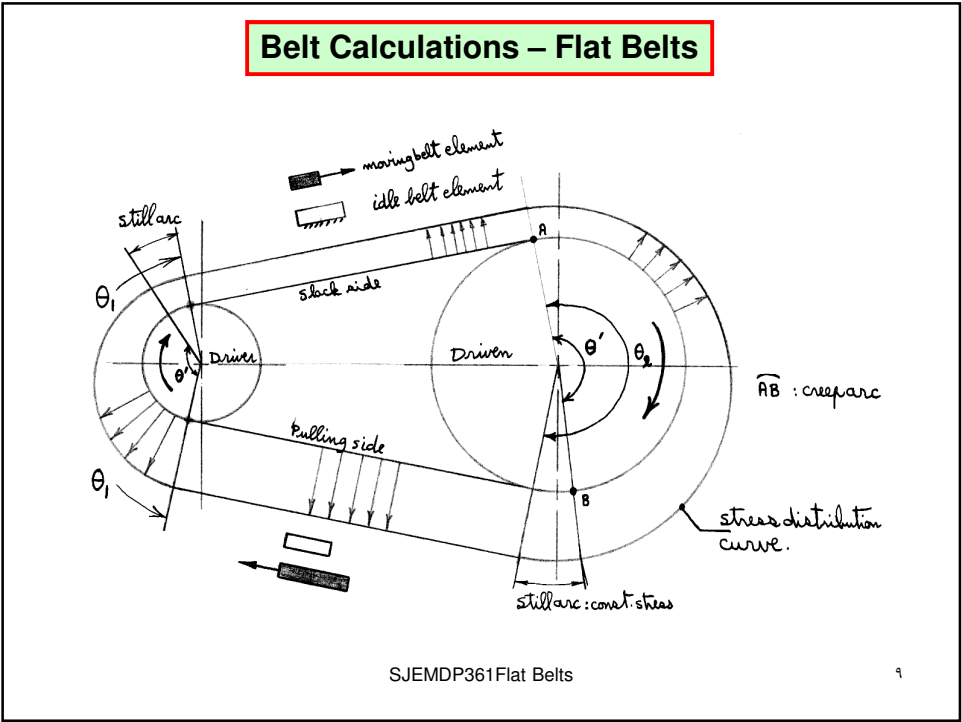
v

Belt Calculations – Flat Belts**Belt Stresses:**

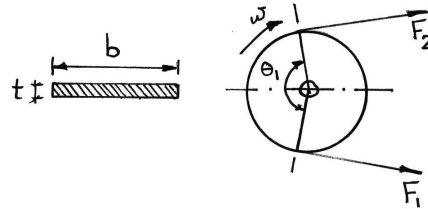
1. Initial: due to own weight or due to stretching or due to tensioning.
2. Bending.
3. Centrifugal.
4. Useful.

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Belt Calculations – Flat Belts



Thickness of Leather Flat Belts mm

Single ply	3	3.5	4	4.5	5	5.5
Double ply	7.5	8	8.5	9	9.5	10

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11

Flat Belts – Belt Materials

Belt material	V_{max} m/s	σ_{all} kg/cm^2	t $^{\circ}C$	E kg/cm^2	γ gm/cm^3
Leather	30-50	40-60	35-70	2500-4500	0.9-1
Rubber/Cotton	40	40	70	9000	1.25
Balata/Cotton	40	44	40	12000	1.25
Rubber/Balata/ Cotton	40	44	45	8000	1.20
Textile:					
Cotton	50	37	70	9500	1.30
Camel hair	50	40	70	4500	1.10

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12

Flat Belts - Standards

Pulley Diameter DIN 111 , (tolerance on diameter) , in mm.

.. 40,45,50,56. (1)
 .. 63,71,'75',80,'85',90. (1.5)
 .. '95',100,'106',112,'118',125. (2)
 .. '132',140,'150',160,'170',180,'190'. (3)
 .. 200,'212',224,'236',250,'265'. (4)
 .. 280,'300',315,'335',355,'375'. (5)
 .. 400,'425',450,'475',500,'530'. (6)
 .. 560,'600',630,'670',710,'750'. (7)
 .. 800,'850',900,'950',1000,'1060'. (8)
 .. 1120,'1180',1250,'1320',1400,'1500'. (10)
 .. 1600,'1700',1800,'1900',2000. (12)
 .. '2120',2240,'2360',2500,'2650',2800,'3000',3150,'3350'. (16)
 .. 3550,'3750',4000,'4250',4500,'4750',5000. (20)

'...' : not recommended

Pulley Breadth (rim) DIN 111 , (tolerance on breadth), in mm.

.. 20,25,32,40,50,63,'71'. (1)
 .. 80,'90',100,'112',125,140. (1.5)
 .. 160,180,200,224,250,280. (2)
 .. 315,355,400,450,500,560,630. (3)

'...' : not recommended.

belt width : lags the pulley breadth by one reading

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11

Flat Belts - Standards

Length of Endless Manufactured Flat Belts DIN 387 & ISO R63

(the nominal length is the inner length of the belt)

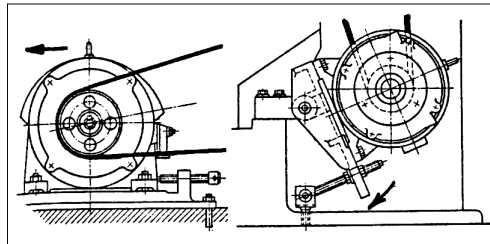
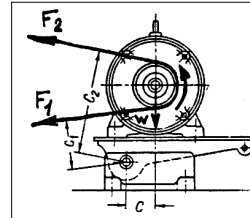
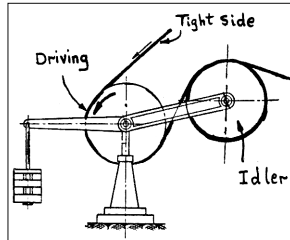
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 530, 560, 600, 630, 670, 710, 750, 800, 850, 900, 950, 1000, 1060,
 1120, 1180, 1250, 1320, 1400, 1500, 1600, 1700, 1800, 1900, 2000,
 2120, 2240, 2360, 2500, 2650, 2800, 3000, 3150, 3350, 3550, 3750,
 4000, 4250, 4500, 4750, 5000, 5300, 5600, 6000, 6300, 6700, 7100,
 7500, 8000, 8500, 9000, 9500, 10000.

Stress-Strain Relation for Leather Belts

Stress (kg/cm ²)	2.5	5.5	10	15.25	22	29	37.5	45
Strain (%)	0.25	0.5	0.75	1.0	1.25	1.5	1.75	2.0

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12

Flat Belts – Tensioning Devices

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10